



Safety & Mission Assurance

Presenter

M. D. Erminger

Date

June 28, 2001

Page

1

STS-104/7A

Flight Readiness Review



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **June 28, 2001**

Page **2**

Approach and General Description

S&MA held reviews in preparation for the STS-104/7A Flight Readiness Review on 11 May, 29 May and 26 June 2001 and is ready to proceed toward launch countdown.

FRR Briefing Overview

- **Significant assessments - *discuss***
- **Special topics**
 - **NASA Safety Reporting System (NSRS) - *discuss***
 - **Space Shuttle Hazard Analysis - *discuss***
 - **Space Shuttle FMEA/CIL – *discuss***
- **Space Shuttle and Space Station Independent Assessments - *discuss***
 - Significant Open Work - *none*
 - CoFR Exceptions - *none*
 - Open Action Items - *none*



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **June 28, 2001**

Page **3**

Significant Assessments

Space Station

- Space Station Command and Control MDM Problems
- Node 1 Common Berthing Mechanism Antenna Debris
- Station Remote Manipulator System Fault Tolerance for Airlock Ops

Orbiter

- Radiator Isolation Valve Incorrect Circuit Breaker
- Life Raft Failure to Inflate During Training and Possible Inadvertent Inflation

EVA

- Bends Treatment Adapter Protocol
- EVA Crewmember Eye Irritation
- EVA Boot Fit

ADDITIONAL ASSESSED ITEMS ARE IN THE BACKUP CHARTS



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **June 28, 2001**

Page **4**

Significant Assessments

SRB

- STS-100 Booster Separation Motor Unburned Propellant

RSRM

- RSRM-81 (STS-105) Left Booster Field Joint Repair
- FSM-9 Nozzle Throat Pocketing

SSME

- First Flight of Block II Engine
 - No New Failure Modes Identified

ET

- ET-117 LH2 Tank Orthogrid Rib Crack

ADDITIONAL ASSESSED ITEMS ARE IN THE BACKUP CHARTS



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **June 28, 2001**

Page **5**

NSRS Summary

There are no NASA Safety Reporting System reports open that are applicable to STS-104/7A.



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **June 28, 2001**

Page **6**

Hazard Analysis Summary

- One Hazard Report was upgraded from Controlled to Accepted Risk
 - Hazard Report, EMU-008, Loss of Habitable Environment
 - Upgraded from Controlled to Accepted Risk due to the revised on-orbit bends treatment procedure
 - New hazard cause – failed open regulator during bends treatment procedure
 - Accepted Risk Rationale – Crewmembers have been trained on the revised bends treatment procedure and will monitor suit pressure to detect and respond to rapid increase
 - A two flight waiver to NSTS 07700, Volume V, Hazard Report submittal requirements has been processed.

Likelihood	Probable			
	Infrequent			
	Remote			X
	Improbable			
		Marginal	Critical	Catastrophic
		Severity		



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **June 28, 2001**

Page **7**

FMEA/CIL Summary

- Two CILs were upgraded from Criticality 1/R2 to 1/1
 - EMU CILs associated with the revised on-orbit bends treatment procedure
 - Suit pressure regulator fails open
 - Water pressure regulator fails open
 - Acceptance Rationale – Crewmembers have been trained on bends treatment procedure and will monitor suit pressure to detect and respond to rapid increase
 - A two flight waiver to NSTS 07700, Volume V, Hazard Report submittal requirements has been processed.



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **June 28, 2001**

Page **8**

Space Shuttle and Space Station Independent Assessments

Number	Title
KS-1004	Assessment of ISS Element Processing at KSC
JA-1125	International Space Station (ISS) Fiber Optics (FO) Lessons Learned
JA-9112	Evaluation of International Space Station (ISS) Fiber Optics (FO) Cables
JS-0013	Evaluation of ISS Crew Health and Performance Impacts Resulting from Long Term Exposure to the ISS Acoustic Environment
JS-9052	Readiness Review of ISS Berthing Operations for Flights 3A to 9A
JS-9063	Review of Thermal Math Models for Airlock and US Lab and Support of Peer Review
JSC-98-079	Flight 7A Stage Integration Review Support (Roll-up)
MSFC-IA-0055	Assessment of Airlock Verification Process
JSC-98-004	PDR of the Oxygen Recharge Compressor Assembly System
HB0092/96	Fiber Optics Termini Production at PG-1 (Phase 2)
MSFC-IA-0037	Airlock Outfitting Critical Design Review
HB009/96	Fiber Optics Termini Production at PG-1 (Phase 2)

Additional Assessed Items Are In The Backup Charts



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **June 28, 2001**

Page **9**

STS-104/7A Readiness Statement

With the satisfactory completion of identified open work, Safety and Mission Assurance has no constraints to STS-104/7A. S&MA has no issues that constrain any of the mission success criteria.

/s/ John Casper
SR&QA Director, JSC

/s/ Shannon Bartell
**Director, KSC Safety, Health
and Independent Assessment**

/s/ Amanda Goodson
S&MA Director, MSFC

/s/ Bill Higgins
Chief, Shuttle S&MA, KSC

/s/ Jerry Holsomback
ISS S&MA Manager

/s/ Hank Davis
HEDS IA Director

/s/ Mark Erminger
SS SR&QA Manager

/s/ Mike Smiles
S&MA Manager, SSC



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **May 31, 2001**

Page **10**

STS-104/7A

Flight Readiness Review

Backup Package



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **May 31, 2001**

Page **11**

Additional Assessments

Orbiter/GFE

- First flight of the ISS WCS as a Shuttle DTO
- Main Propulsion System (MPS) Braycote Contamination
- OV-104 Thermal Protection System (TPS) Water intrusion
- OV-104 Wing Leading Edge (WLE) Spanner Beam Inspection
- OV-104 Reinforced Carbon Carbon (RCC) White Residue/Sodium Carbonate Contamination
- STS-100 Orbital Maneuvering System Pod Movement
- STS-100 Flash Evaporator System (FES) Feedline Heater Failed Off
- STS-100 Water Spray Boiler (WSB) in-flight anomaly
- FES Nozzle Assembly Hi-Load Heater Failure
- OV-103 Loose Engine Bolt
- OV-104 Wet Tiles After Waterproofing Process
- Load Control Assembly
- MPS Oil Contamination
- RCS Nozzle Chip
- NSI corrosion found during lot inspection testing



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **May 31, 2001**

Page **12**

Additional Assessments

SRB

- First Flight/Critical Process Change
 - Revised Aft Skirt Inspection Criteria
- Confined Detonating Fuse (CDF) PETN (Pentaerythrite Tetranitrate) Nitrogen Content Specification
- Aft Skirt S/N 20022 Return to Flight
- BSM Cracked Graphite Throat

RSRM

- First Flight/Critical Process Change
 - Nozzle-to-Case Joint Assembly Process Enhancements
- Right Hand Forward Exit Cone Phenolic Repair

ET

- ET 109 Weld Repair
- ET 109 Intertank Inadvertent Foam Venting



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **May 31, 2001**

Page **13**

Additional Assessments

SSME

- Braycote Contamination
- STS-104 Operational Data Delivery Error
- SSME Nozzle Tube Ruptures at Stennis Space Center
- Pressure Transducer Leak

Space Station

- First Flight of Oxygen Recharge Compressor Assembly (ORCA)
- STS-98 Launch to Activation Heater (LTA) problem
- Plasma Arcing Hazard Update
- Airlock hatch Seal Leakage
- Ventilation Behind Closeout Panels
- Space Station Interference Issues
- MCA Anomalies/CSA-CP Certification and affect on EVA

EVA

- Hamilton Sundstrand Test Stand Regulator O-ring Combustion
- EVA Pre-Breath Procedure



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **May 31, 2001**

Page **14**

Space Shuttle and Space Station Independent Assessments

Number	Title
JS-0056	International Space Station Pre-Mission and Mission Timeline Development Process
JS-0046	International Space Station Program (ISSP) Non-Conformance Report (NCR) Process
GS-0006	Boeing-Canoga Park (CP) Non-Standard Part Approval Request (NSPAR) Process Assessment
JA-9111	Review of ISS Digital Pre-assembly (DPA)
JA-9102	Survey of Space Qualified Cameras for Direct View Berthing Applications
JS-0018	Adequacy of Thermal Math Model (TMM) for ISS Active Thermal Control System (ATCS)
JS-9086	Evaluation of the Limited Life Item (LLI) Operational Usage Tracking Processes following Launch-to-Activation
JS-0016	Adequacy of International Space Station (ISS) Contingency Planning for Leonid Meteor Events
JS-9089	Determination of ISS Assembly Activity Failures That Would Require Shuttle Contingency Flights
MH-0005	Electrical, Electronic, & Electromechanical (EEE) Parts and Nonstandard Part Approval Request (NSPAR) Process
MH-9010	Radiation Hardening Verification for Critical ISS GFE EEE Components
KS-9005	Limited Life Item (LLI) Identification, Tracking, and Control
JS-9054	H-fixture Stress and Fracture Analysis Review
JS-9069	Completeness of Operational Procedures for Incorporation into the Multi-Element Integrated Testing (MEIT)
JS-9038	Adequacy of the End-to-End Verification Test of the Inventory Management System (IMS)
JS-9043	ISS Teletraining Effectivity
GS-9006	Remote Power Controller Module (RPCM) Types I & II FCA/PCA
JS-9030	Applicability of Spacelab Flight Rules to the ISS
JS-9032	Phase I Program (Shuttle/Mir) to Phase 2 Program (Shuttle/ISS) Hazard Assessment Traceability
JS-9007	Review of Generic Flight Rules, Volume B
JS-9008	Review of Generic Flight Rules, Volume C
JSC-98-100	Implementation of the Problem Reporting and Corrective Action (PRACA) System for the ISS Program
JS-9006	Evaluation of Flight Rule CRs for Volumes B&C Except for C&T and EVA
JSC-98-101	An Evaluation of Space Vision System (SVS Testing)
JS-SH-9001	Identification of Shuttle Program Issues which Affect Station/Shuttle Readiness for Flights 2A through 7A



Safety & Mission Assurance

Presenter **M. D. Erminger**

Date **May 31, 2001**

Page **15**

Space Shuttle and Space Station Independent Assessments

Number	Title
HS-9010	Incremental Functional Configuration Audit (IFCA) Number One (#1) Assessment for the Capture Latch Assembly
HS-9011	Functional Configuration Audit/Physical Configuration Audit (FCA/PCA) Assessment for the Capture Latch Assembly
MSFC-IA-0061	ISS Electrical, Electronic, and Electromechanical (EEE) Parts Spot Audits
MSFC-IA-0059	Common Berthing Mechanism (CBM) Assembly Level Qualification Test (ALQT) Update Assessment
JSC-98-012	Identification of Thermal Model Validation Testing Needed for ORUs Flown from Flight 2A through 8A
MSFC-IA-0041	Common Berthing Mechanism (CBM) Assembly Level Qualification Test and Integrated Berthing Test
JSC-LM97-151	Special Assessment: Assessment of the HARP Team's Evaluation of the Program Acceptance Process
JSC-LM97-052	Adequacy of Space Vision System Testing and Verification with Respect to Station Operations
JSC-LSIS-106	Risk Assessment of Ku-Band Antenna Survival and Operations Through Flight 8A
LSIS-167	Assess the Adequacy of External Viewing Resources to Support Station Activities for Stages 1 Through 16
LSIS-104	Design Analysis Cycle (DAC) #4 Special Assessment Review Item Discrepancies
LSIS-173	Maintenance for Stages 1 Through 16 (Flights 1A/R Through 11A)
LSIS-172	Assess the Adequacy of External Viewing Resources to Support Station Assembly Stages 1 Through 16
LSIS-124	The Relative Benefit of Individual Spare Part Availability to ISS Functional Availability
LSIS-047	Assessment of the Failure Rates of Items Requiring Scheduled Remove and Replace (Preventive Maintenance)
MSFC-IA-015	Report On the International Space Station's Ability To Provide Adequate Caution & Warning Annunciation